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THE UNITED STATES PHARMACOPŒIA OF 1890.

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[*Continued from p. 473.*]

The extreme conservatism of the chemical nomenclature, is in marked contrast to the radical changes that have been adopted in giving the botanical names of plants and the citation of authors for such names. The committee have adopted the rules of the Botanical Club of the A. A. A. S. which were adopted as recently as August 19, 1892, and have published these rules on page XXXII, adding another unnecessary page to an already too large volume. The Pharmacopœia is not intended as a botanical text-book, much less as a botanical authority, and it is presumed that the committee were fully acquainted with the unsettled state of botanical nomenclature, before lending their apparent weight of authority by endorsing these rules.

In recent years, the battle of nomenclature caused by a disagreement as to the meaning of "the law of priority of publication," has so obscured the botanical horizon, that botany has appeared more as a study of plant names than of plants, and a science already loaded down with a mass of technical terms, is being buried with synonyms. The Paris code of 1867, stated that *in transferring* a species from one genus to another, the specific name is maintained. The strict nomenclaturists have contended that, in accordance with the idea that priority of publication alone should give authority, the new binomial should be made by using the oldest specific name commencing with Linnæus Species Plantarum, 1753, and for generic with

the Linnæus Systema of 1735.[1] They would have no regard for the appropriateness, or what Watson has termed the *convenience* of the name. It is apparent that such a rule destroys stability of names, as new discoveries of older names would cause continual changes.

It is hoped that the committee were aware that the more conservative botanists, whose authority had been heretofore recognized, were not in sympathy with these radical views on nomenclature. Asa Gray did not adopt them and Sereno Watson, on his death-bed, took occasion to dictate an article giving the views held by both Professor Gray and himself on this subject. (See the Botanical Gazette, June, 1892, p. 169.)

The views held by these American authors were substantially those adopted at Kew. Professor Jackson, of that institution, writes (Britten's Journal of Botany, 1887, p. 69): "Our practice is to take the name under which any given plant is placed in its true genus as the name to be kept up, even though the author of it may have ignored the proper rule of retaining the specific name when transferring it from its old genus to the new; when, at least, such name is not already in the genus receiving the accession. To wantonly set aside the joint name thus given and to publish a new name by joining the oldest specific name to the true generic is a mischievous practice, which should never be condoned; it is adding to the already vast mass of useless synonyms, and is more likely to be the offspring of vanity than a sincere desire to promote science."

Sassafras aptly illustrates the two methods of naming. In 1836, Nees rightly named the plant Sassafras officinale, and this name has been generally adopted since and recognized in the past editions of the Pharmacopœia, and in Gray's Manual and other American botanical works. Previous to this Nuttall had applied Evosmos albida and Linnæus Laurus sassafras, and Salisbury, in 1796, Laurus variifolia. Otto Kuntze now proposes as the correct binomial (according to priority only), Sassafras variifolium, and the Pharmacopœia of 1890 states Sassafras variifolium (Salisbury), O. Kuntze, as the source of sassafras.

It is now a matter of record, that the very meeting that adopted the rules in the Rochester Convention of 1892, appointed a delegate to attend the International Botanical Congress held in Genoa, in

[1] The date 1753 will most likely be the date adopted for both generic and specific names by an international agreement.

September, 1892, at which this subject was a prominent topic of discussion, and an international committee was appointed to consider the same. The decisions of the Genoa congress have not been unanimously adopted and at the International Congress, called for August, 1893, at Madison, Wis., another attempt was to have been made toward an universal agreement. Dr. Otto Kuntze, the foremost nomenclaturist, accepts no authority, and on priority alone would set aside, as he says, hundreds of Bentham and Hooker's names for genera, and in his Revisio Generum Plantarum (1891) proposes changes affecting the names of many thousands of plants. By a single sentence, the generic name Astragalus is replaced by Tragacantha, changing thus the names of 1,500 species (*ibid.*, pp. 210 and 940). Strangely this change has not been adopted by the Pharmacopœia. It is known that the *botanical authorities* at Berlin, astounded by the confusion likely to result from this publication of Kuntze, proposed, in the latter part of 1892, amending the code of 1867, and have suggested a revision of the same and significant omen, exceptions to this law of priority in a number of genera covering about 5,000 species. It is a query if the nomenclaturists practically adopt their own suggestions and reclassify and label their herbarium specimens with each change proposed, or whether their theories remain on paper? It will also be interesting to note how many of these names will survive till the pharmacopœial revision of 1900.

This argument has been extended very much beyond what was originally intended. But the anomalous position of the committee is such as to cause comment. To cast aside well-recognized names and authorities, and to accept rules which were presented by a committee of the Botanical Section of the A. A. A. S. within 24 hours of the time of their appointment, and which had not withstood the test of application, and to reject rules adopted by the Chemical Section of the same Association when presented by a committee whose labors lasted for more than 4 years, seems inexplicable, particularly so, when the committee appointed by the International Congress of Botanists at Genoa, to consider this subject, had not completed their work.

There will always be a number of changes in the botanical names of plants, necessarily caused by mistakes in classification or other errors of botanists, for even they do err, as, for example, it is known

that in the Linnæan herbarium the names of Cerastium viscosum and C. vulgatum were transposed, and that Linnæus filius mixed the plants yielding Balsam of Peru and Balsam of Tolu. By thorough study of genera or orders by monographers, changes in accepted names became necessary. An instance is found in Aloes, where the studies of J. G. Baker, on Aloinæ, have made him an authority, whose determinations are to be accepted. Changes are likewise necessitated by newly-discovered materials and information regarding the true source of drugs, especially if these are obtained from countries whose flora has been but imperfectly studied. Examples of this are found in Illicium, which E. M. Holmes proved to be derived from Illicium verum, Hook. fil. (see Pharm. Journal and Transactions, August 11, 1888) and in Pernambuco Jaborandi, which the same author decides is from a previously unnamed species of Pilocarpus. These names are rightly adopted in the Pharmacopœia, and it is a matter for congratulation that Mr. Holmes had published this paper on Jaborandi before the appearance of the Pharmacopœia (Pharm. Journal and Transactions, June 10, 1893, p. 1005; see also Amer. Jour. Pharm., July, 1893, p. 351) so that the "ined" after Pilocarpus Jaborandi, Holmes, on p. 301, can be eradicated, as unpublished matter is *not accepted* as authority.

The citation of authors might be likewise simplified. If the authority of the maker of the new binomial (or as he has been called the synonym manufacturer) is to be accepted, let us be content, *for the Pharmacopœia*, with the statement of such author's name, which is sufficient to designate the plant intended. For the student of pharmacy, Hedeoma pulegioides, Persoon, is as good as Hedeoma pulegioides (Linné), Persoon; if Persoon and not Aiton (U. S. P., 1880) is author of Gelsemium sempervirens, then it is sufficient to write Gelsemium sempervirens, Persoon, not Gelsemium sempervirens (Linné), Persoon. If O. Kuntze's name is correct for Sassafras, why not write Sassafras variifolium, O. Kuntze, and not Sassafras variifolium (Salisbury), O. Kuntze? It is to be observed, that the latter form continually implies the authority of earlier botanists to names which they would never have accepted. The true aim of science is to simplify not to involve.

The changes in the titles of official preparations are not very numerous. In a number of extracts and tinctures it has been deemed advisable to designate, in the title, the part of the plant used

as Extractum Belladonnæ Foliorum Alcoholicum, Extractum Belladonnæ Radicis Fluidum, Tinctura Colchici Seminis, etc. Opium is again said to be deodorized not denarcotized. It is a query, which is the most important, the odor or the narcotine extracted by the use of ether? If the latter, then denarcotized, or if that is not correct, then as suggested denarcotinated would be correct. Sapo Mollis is the new name for Sapo Viridis of the Pharmacopœia of 1880, and a formula is given for preparing it from linseed oil and potassa. The commercial article was only very rarely found to be green, and that only when it was made from hemp seed oil. The Tincture of Green Soap, 1880, is now Liniment of Soft Soap. The term mistura is now officially restricted to those preparations in which insoluble material not of an oily character is suspended in aqueous solution by the use of gum or other viscid material. As a result, ammoniac, almond, asafœtida and chloroform mixtures of 1880 are now classed as Emulsions, under the Latin title "Emulsum." But the remedies which physicians *now prescribe* under the name of "*Emulsions*" are not represented. It would have been a *practical experiment* and a taking one to have introduced a "standard" formula for (say) Emulsion of cod liver oil with hypophosphites. It is not too late to teach our medical brethren to write Emulsum Olei Morrhuæ cum Hypophosphitum, *U. S. P.*, instead of Scotts, Phillips, etc. I know someone says, "We have a National Formulary," but the doctors don't know that book. It is a book of druggists' formulas in the preparation of which they have not taken any part or interest. This would in a very large measure stop the present system of fighting patent medicines by increasing the number, wherein each druggist feels compelled to make a preparation after his own formula, *just as good* as the other proprietary. We want something that is not "as good," but the best, because it has the stamp of official authority.

The Pharmacopœia, to remain the authority, must be *abreast* of the times. It must neither theorize in advance nor retain obsolete ideas. *Standard* formulas must be introduced for remedies prescribed daily with success, and those whose use has become only occasional, can safely be relegated to the formularies. The "*ideal*" Pharmacopœia of some is a book of simples. Such it never has been and never can be made.

Liquor Ferri et Ammonii Acetatis is the new name for Basham's

mixture. While "mistura" is hardly an appropriate name for a clear liquid preparation, the term liquor strikes us very strangely for a preparation containing over twenty per cent. of flavoring and sweetening material. Would not "Elixir" have been a more appropriate name?

It is to be observed that Acetum Opii and Acetum Scillæ are now made by maceration instead of percolation, the strength remaining about the same as in 1880.

There are some changes in the acids of the Pharmacopœia, requiring notice. Volumetric solution of potassic hydrate with phenolphthalein as an indicator, is generally adopted for determining strength. Acid, acetic, still remains the 36 per cent. acid and the glacial acid 99 per cent. It would have been well to have changed the former to the 60 per cent. acid now being manufactured extensively.

It is to be regretted that under the title of benzoic acid both the natural and the synthetic acids are recognized and that in the tests for identification the latter seems to be given the preference. In the past, we have been taught to discriminate against the artificial acids and tests were proposed to detect such substitutes or adulterants of the natural. Those who have administered both, and benzoates made from both, distinguish a practical difference. The administering of the synthetic is generally followed by a disagreeable taste, very persistent and frequently producing nausea. This effect is most likely due to toluol derivatives remaining as impurities, but is nevertheless recognized and physicians are careful, in many instances, to specify "natural." Tinctura Opii Camphorata, should be stated as a benzoic acid preparation; Phenol, should be the title, with carbolic acid as a synonym. A volumetric method for determining the amount of absolute phenol present, and depending on the tribrom-phenol reaction, has been adopted. Likewise Chromic trioxide and chromic anhydride are given as synonyms for Acidum Chromicum; the former would be the correct title.

Diluted Hydrocyanic Acid is again a two per cent. solution in *water only*. The acid as distilled being condensed in a receiver containing distilled water, not diluted alcohol, as in the pharmacopœial process of 1880; and the distillation is stopped when the volume of liquid in the retort is reduced to one-half. The retention of the formula for making this acid extemporaneously, is surely unnecessary.

Diluted Hypophosphorous Acid is a new addition and is directed to be about 10 per cent. of the absolute acid. An acid of fifty per cent. strength has been supplied by the manufacturers for some years and, according to F. X. Moerk, is more stable than the weaker acid and should have been recognized in place of the dilute.

Nitric Acid is now 68 per cent. of HNO_3 instead of 69·4 per cent. as formerly, and Sulphuric Acid is 92·5 per cent., with sp. gr. 1·835 instead of 96 per cent. On the other hand, Phosphoric Acid is now 85 per cent. instead of 50 per cent. The so-called syrupy phosphoric acid (85 per cent.) was in extensive use in 1880, and it is to be regretted, that it was not then made official, as prior to that date only the diluted acid had been recognized. There is, in the future, the likelihood of considerable confusion arising from this change of standard. The process of manufacture of phosphoric acid is rightly omitted, as it is such as to be hardly practical for the pharmacist to attempt.

Sulphurous Acid should hereafter contain 6·4 per cent. of sulphur dioxide instead of 3·5 per cent. as heretofore. Benzoinated Lard is again directed to be prepared by tying the benzoin in muslin and suspending in the melted lard for 2 hours. A superior product would be obtained by mixing the benzoin in a coarse powder with the lard and allowing to stand for six hours, then melt and strain. By the official process but a small portion of the benzoin becomes thoroughly exposed to the action of the lard.

Wool-fat, an ancient medicament, forgotten until recently introduced in the purified state by Liebrich, is recognized under the same name as that adopted in the "Additions to the British Pharmacopœia" in 1890, and the degree of allowable hydration (30 per cent.), is likewise the same in both standards. The statement that it is "miscible with twice its weight of water without losing its ointment-like character," requires some little modification. At the normal temperature only about an equal weight can be incorporated. "Unna says 105 per cent. at 15° C." (see Amer. Journal of Pharmacy, 1886, p. 101); but, by warming the mortar, two hundred parts can be incorporated with 100 parts of the lanolin.

The ether of the Pharmacopœia of 1880, containing but 74 per cent. of ethyl oxide, has been discarded and only the stronger ether containing 96 per cent. of ethyl oxide is now official under the title Æther. The potassium iodide test, given on p. 28, we are

told, indicates by the absence of color produced "absence of aldehyde, etc." What is meant by "etc.;" we presume ozone and hydrogen peroxide?

We now have Alcohol, Absolute Alcohol, Deodorized Alcohol and Diluted Alcohol, all official. Absolute alcohol should be placed with the reagents and test solutions. The official alcohol should, likewise, be required to conform to the percentage and tests for deodorized alcohol and the latter title dropped. The difference in commercial value between the two grades during the past year has only been from 5 to 10 cents per gallon. The U. S. P., 1880, required alcohol to stand the sulphuric acid test which is now given as the distinguishing test between these grades.

Diluted alcohol is again made from *equal volumes* of alcohol and water, and is 41 per cent. by weight or 48·6 per cent. by volume, instead of being 53 per cent. by volume, as in 1880.

The rules for making a lower percentage of alcohol from a higher percentage should be attached to the alcohol table in the appendix and not incorporated in the body of the book.

Purified Aloes remains. There may be some reason for directing its use in the pills containing that article and in compound extract of colocynth, but in the various tinctures which are necessarily filtered, the Socotrine aloes might have been directed. The use of aloes and not purified aloes in these tinctures appears to be universal.

Aloin is a newly admitted remedy. It is to be remarked that as one of the principal uses of a Pharmacopœia is to prevent uncertainty, to fix definite standards, it would have been well to have recognized only barbaloin under that title, especially as it constitutes almost entirely the aloin of commerce.

Dried Alum is now manufactured in such quantities and at such reasonable price that its preparation is seldom, if ever, attempted by the pharmacist and so the process of manufacture might have been omitted. Aluminum Hydrate should have been omitted; use would not necessitate its retention.

Ammonium Carbonate is tested for empyreumatic substances by supersaturating with nitric acid and evaporating to dryness when a colorless and odorless residue should be obtained; the permanganate test of the Pharmacopœia, 1880, being discarded. It is titrated with normal sulphuric acid solution, using rosolic acid as an indicator. But why not direct that 2·613 grm. of the salt be dissolved

and titrated instead of taking 7·84 grm. and dissolving and using only one-third for the test?

Ammonium Nitrate might have been dropped, as its use is almost entirely restricted to dental practice for preparing nitrogen monoxide and even here the purchase of the compressed gas in cylinders is generally deemed preferable to preparing the same.

In assaying Amyl Nitrite, a control experiment should be directed, using the same quantities of reagents and alcohol and under the same conditions without the amyl nitrite and the volume of any gas generated deducted from that found in the assay.

The method of making aromatic waters is again changed. The cotton method of 1880 is discarded, and in place of magnesium carbonate as a distributing material for the essential oil, as in 1870, calcium phosphate is now directed. This is not a new idea, but is one which I have frequently employed since 1878. It is to be remarked that as magnesium carbonate is very much more bulky or specifically lighter than precipitated calcium phosphate that an increased weight of the latter should be directed. The amount now directed is nearly the same weight as that of magnesium carbonate formerly ordered, and in most cases it will be found advantageous to increase this to 8 grm. instead of 4 grm. in the official formula. The process is otherwise unobjectionable, provided proper care is exercised in selecting precipitated calcium phosphate answering the official tests for purity. Several samples examined by the writer have contained notable quantities of carbonate, alkali and metallic impurities.

Bitter almond water, chloroform water and creosote water are direct solutions in water without the aid of any distributing material or chemical means.

Aqua Hydrogenii Dioxidi is the official name for *solution* of hydrogen peroxide, and an extensive formula for its preparation from barium dioxide and phosphoric acid is given, the strength adopted being 10 volumes of available oxygen when estimated by the process of assay given. This preparation and likewise chlorine water, and the ammonia waters should be classified with liquors or a new class of solutions. In addition to the other stringent requirements for Distilled Water it must now be free from carbonic acid. This is a degree of purity we fear not often attained, and where necessary it is easy to direct boiling to dispel the *carbon dioxide*.

On p. 48 we are told that triple orange flower water, the stronger orange flower water of the Pharmacopœia of 1890, is the *same* as the "Aqua Aurantii Florum, Pharm., 1880," and a formula is given for making "orange flower water" by dilution, and from this latter syrup of orange flower water is directed to be made. On p. 54 the same information is given regarding rose water, and it is to be observed, that the rose water and not the stronger rose water, is stated to be used in cold cream, whereas in the formula p. 440 the stronger is specified. The truth is that the terms "*triple*" and "*quadruple*" were applied by the manufacturers to indicate that the products were three and four times the strength of the official, and it has become the trade custom to make the pharmacopœial product from these by the necessary dilution. As orange flower water is only used for making the syrup and for flavoring the stronger only should be official. The stronger rose water, however, is too strong to be used undiluted in eye waters, injections, etc., and so rose water should be retained, but the stronger rose water should be directed for the pharmacopœial preparations. Confection of Rose should be given as a preparation containing stronger rose water, likewise, as mentioned, Ointment of Rose Water.

Silver Cyanide should be omitted; provided, the formula for the extemporaneous preparation of diluted hydrocyanic acid be likewise dropped.

The Subcarbonate and Subnitrate of Bismuth are now recognized as of varying composition and consequently chemical formulas are omitted. Bettendorff's arsenic test is directed in place of the Fleitmann's test of 1880, to prove the absence or limit allowable of that element.

Calamus is, as in 1880, *unpeeled.* How many druggists have the official?

Calx Chlorata is required to contain not less than 35 per cent. of available chlorine instead of 25 per cent. as heretofore, and this is in accordance with what can now be obtained in the best commercial article. Calx Sulphurata is now made by calcining a mixture of dried calcium sulphate, charcoal and starch, and the resulting product is required to contain at least 60 per cent. of calcium monosulphide, whereas the Pharmacopœia of 1880 specified "not less than 36 per cent."

To the list of preparations containing camphor must be added Linimentum Belladonnæ, Linimentum Sinapis Compositum and Pulvis Morphinæ Compositus and to those of Cardamom, Extractum Colocynthidis Compositum, Tinctura Gentianæ Composita, Tinctura Rhei and Tinctura Rhei Dulcis. These are but samples of the "sins of omission," which appear all through the book. In the preparation of Cerate and Ointment, benzoinated lard should have been directed in place of "lard," and the same should have been adopted even in the compound cerates and ointments where lard is directed.

Camphor Cerate now contains 10 per cent., instead of 3 per cent., 1880, of camphor liniment, a commendable change.

Codeine Sulphate is used extensively where it is desired to give that remedy in liquid form as in bronchial affections and we are surprised not to find it introduced.

The directions for making Collodion are again changed. In the Pharmacopœia of 1880, the pyroxylin was directed to be macerated in the alcohol for 15 minutes and then the ether added. The directions of 1890 are to macerate for 15 minutes in the ether and then add the alcohol. Why not mix the ether and alcohol and then add the pyroxylin in portions, shaking after each addition? This, the method of 1870, has always yielded me the best results.

In the formula for Confection of Senna, on p. 99, it is to be noted that oil of coriander and not fruit is directed, yet, on p. 100, we are told that coriander is used.

Creosote is now correctly described as a mixture of phenols chiefly guaiacol and cresol, and that from beech-wood tar is preferred. The specific gravity and tests for other phenols and pyrogallic ethers are the same as adopted by the German Pharmacopœia.

Crocus should be accompanied by a test for the detection of soluble ammonium salts which have been used as adulterants. The amount of ash stated, 7·5 per cent., is too high. Examinations of a number of samples have yielded the writer 4·5 to 6 per cent. and in all pure saffrons was *non-fusible*, which should be stated in the official test.

Cubeb is notoriously adulterated and the description might have been accompanied by some description of the most common of these adulterants or some of the color reactions proposed.

What has been before said regarding the necessity of the Phar-

macopœia recognizing remedies frequently prescribed and furnishing standard formulas for the same, applies forcibly to the class of elixirs. The course of the Pharmacopœia, on this subject, has been erratic. In frequency of use, elixirs rank with tinctures, fluid extracts, syrups and aromatic waters and attention has been repeatedly directed to the necessity for official formulas for the most popular. Statistics compiled in 1888, show that Elixir of Calisaya was prescribed in about 3 per cent. of the prescriptions written in the United States and that the class was represented in from 54 to 108 out of every 1,000 prescriptions in various localities (see Amer. Journal of Pharmacy, 1888, p. 283), and their popularity seems still to be on the increase. The Pharmacopœia of 1880 *recognized* this demand by introducing Elixir Aurantii as a simple elixir or basic elixir, and this, using a vulgarity, "took well." In the Pharmacopœia of 1890, this is dismissed and two formulas are introduced, one for Aromatic Elixir and another for Elixir of Phosphorus. The former of these, *we presume*, is intended as a substitute for the simple elixir of the previous edition. If this was intended, it should have been given the synonym of basic elixir. The latter is, in this section of country, but very little used and, surely, no one can contend that a solution of phosphorus, even, when in 55 per cent. glycerin, will be a permanent preparation. We cannot explain what influence it has exercised in the minds of the committee, to be thus recognized and the frequently used Elixirs of Cinchona, Iron, Quinine and Strychnine, Potassium Bromide, etc., remain forgotten. The practical pharmacist, in answer to his appeal for bread, has received not a stone but a couple of small and dry bones.

The change in the formula for Belladonna Plaster, is to be noted. In the previous Pharmacopœias, it was directed to be made from a specially prepared extract of the root, made by extracting this with alcohol. It is now directed to be prepared from the extract of the leaf and one-half of the resin plaster is substituted by soap plaster. In Mercury Plaster and likewise in the Mercury Ointment, the mercury is disseminated by trituration with oleate of mercury. Lead Plaster is directed to be boiled in a "bright *copper* boiler." Why not use an enamelled or porcelain or other boiler? In the *official emulsions*, the formula for Emulsion of Chloroform is very different from that previously adopted for mistura chloroformi. The quantity of chloroform is somewhat reduced and the camphor is omitted

and as an emulsionizing agent tragacanth with oil of almonds to furnish blandness displaces the yolk of egg. This change is not approved.

There are thirty-three extracts official. The Pharmacopœia of 1880, added in the directions accompanying the formulas, permission to incorporate 5 per cent. of the weight of the extract, of glycerin to maintain its proper consistence. The Pharmacopœia of 1890, in a preliminary note (p. XLII), recommends 10 per cent. It is obvious, that in many cases this will be entirely too large a proportion.

The Pharmacopœia of 1880 directed the use of tartaric acid in the menstruum of all aconite preparations, because Duquesnel had proposed its use in the extraction of the root for alkaloid. It is noticeable that tartaric acid is now omitted in all the official formulas for aconite preparations.

The formula for Compound Extract of Colocynth directs that the purified aloes should be melted, then the alcohol, soap, extract of colocynth and resin of scammony added and the heat continued until a homogeneous mass yielding a brittle thread be obtained; the cardamom is then added and the product powdered. Starting with purified aloes and powdered resin of scammony and extract of colocynth and cardamom, why not direct the soap in *fine* powder and reduce the mixed products to a powder by triturating. The heating on the water-bath with alcohol to produce a mass to be then reduced to a powder seems wasteful of both time and material. In both the Extract and Fluid Extract of Conium acetic acid is directed in place of the hydrochloric of the Pharmacopœia of 1880. Extract of Ergot is directed to be made by evaporating the fluid extract to a pilular consistence and not to a definite weight as in 1880. The extract of ergot should be an aqueous extract, yielding a product entirely soluble in water and made by extraction with water containing only sufficient alcohol to prevent fermentation of the ergot. I would suggest the following process as yielding an excellent product suitable alike for internal administration or hypodermatic injection. The ergot in moderately fine powder is extracted by percolation with purified benzin, then dried and then percolated with a menstruum of 1 part by volume of alcohol and 9 of water. The alcohol is recovered by distillation and the product evaporated to the proper consistence.

We should have an official Fluid Extract of Wahoo as well as a solid extract; the former appears to be more used than the latter.

Extract of Jalap is reintroduced. Although dismissed in the Pharmacopœia of 1880, its use was never discontinued and, even in the compound cathartic pill, commercially it was not displaced. Extract of Juglans is now directed to be prepared with diluted alcohol and not alcohol as heretofore. It should have been dismissed for want of use.

Extract of Nux Vomica is directed to be made by extracting 1,000 grms. of the powdered drug with a mixture of alcohol 750 cc., water 250 cc., acetic acid 50 cc., continuing the extraction with a menstruum of alcohol 3 to water 1 by volume, until the nux vomica is extracted. The alcohol is recovered by distillation, and the product evaporated to 150 grms., transferred to a bottle, washing out the evaporating dish with 50 cc. warm water and add to the extract. This is now treated repeatedly with ether until it yields no more oil to the solvent. The oil recovered by the evaporation of the ether is treated with acidulated (acetic acid) water to recover any alkaloid extracted by the ether. This aqueous solution is mixed with the extract, and this is evaporated to 200 grms., the moisture and percentage of alkaloid determined and the extract dried and powdered, adding sufficient milk sugar to make the finished product contain 15 per cent. of alkaloids. The process would be simplified and most likely cheapened if the oil were first extracted from the nux vomica by the use of benzin before extraction with alcohol. Benzin is such a poor solvent for alkaloids that the loss would hardly be appreciable, but if desirable to recover dry alkaloids extracted, the benzin residue could be treated with acidulated water, and this evaporated incorporated with the extract.

Extract of Opium is likewise made in the most extravagant way. With the morphine strength of opium fixed at not below 9 per cent., and that in commerce frequently 10·5 to 13 per cent., it is very easy to prepare from the gum opium a dry and powdered extract standardized to 18 per cent. morphine. Yet the Pharmacopœia directs powdered opium. I doubt if any practical pharmacist or manufacturer will dry his opium and reduce it to number 80 powder before treating same for extract.

Extract of Uva Ursi is a new addition, and we presume that it must be used. We had expected to find both a solid and a Fluid

Extract of Sumbul; both of these appear to be growing in favor, but neither was introduced.

Eighty-eight fluid extracts are official, and there are but two or three that should be dismissed, namely, those of kousso, menispermum and savine. Of the latter, we are told on p. 165, that an official preparation is Ceratum Sabinæ, yet this has been dismissed. There are some notable changes in the menstruums directed. Some of these changes are good, but others are questionable. The menstruum for both the extract and the Fluid Extract of Aconite, has been alcohol. It is now directed only for the former, for the fluid extract a mixture of 3 volumes alcohol and 1 volume water is directed. For arnica root, diluted alcohol has been ordered in the past. It is now retained for the extract, but the fluid extract is directed to be made with 3 volumes alcohol, 1 volume water. Diluted alcohol has always been conceded to be the best menstruum for both arnica root and flowers, and the reason for the change is not apparent.

The menstruum for Fluid Extract of Belladonna root is changed from alcohol to alcohol 4 vols., water 1, and for Buchu alcohol is directed instead of alcohol 2 parts, water 1 part, of 1880. For Fluid Extract of Calumba, 3 vols. of alcohol and 1 vol. water displaces diluted alcohol; a commendable change. The alcoholic strength of the menstruum is increased also in Fluid Extract of Chirata, and it is to be observed that glycerin has been omitted in this and in the fluid extracts of chimaphila, leptandra, matico and sarsaparilla, but has been added in fluid extracts of chestnut leaves, hamamelis and hydrastis.

In the Pharmacopœia of 1880, Fluid Extract of Cypripedium was directed to be prepared with alcohol; that of 1890, directs diluted alcohol, a menstruum the same as used for fluid extract of valerian, 3 vols. alcohol, 1 vol. water, would have been better. In Extract of Conium, and in fluid extracts of conium and ergot, acetic acid is directed in place of the hydrochloric acid, 1880.

The U. S. P., 1880, unsatisfactory formula for Fluid Extract of Ipecac, is dismissed and a menstruum of 3 vols. alcohol to 1 vol. water directed, this being one of the suggestions of Mr. A. Robbins that has been adopted.

Fluid Extract of Malt disappears entirely from the Pharmacopœia, but not from use. An official fluid extract with fixed diastasic

value should have been introduced. Then, perhaps, we would have gradually stopped handling brown stout, porter and beer under the labels of Tom, Dick and Harry's extract of malt. It should be a medicinal product, not a beverage.

Fluid Extract of Nux Vomica, 1890, is essentially the saturated tincture suggested by Lyons in 1885. The suggestion of Maisch to reduce the alcohol to 70 per cent. by volume, as extracting less oil, is practically adopted in the menstruum of 3 vols. of alcohol and one volume water directed. The process of the Pharmacopœia is wasteful of alcohol, as it directs the extraction of the drug and subsequently by distillation to recover the alcohol and evaporate the residue to a definite weight, of which 4 grms. are assayed from the alkaloids calculated in the entire extract; a fluid extract is made, by dilution with alcohol and water, of such a strength that 100 cc contains 1·5 per cent. of total alkaloids. Distillation, necessarily, causes some loss of alcohol. It is to be observed that the fluid extract is of such a strength that if 10 grms. of the solid extract be dissolved in a sufficient quantity of the menstruum to yield 100 cc. the product is identical in strength with the official process fluid extract. As the solution of the extract has been adopted for tincture, why not adopt same for fluid extract also? or still better, as the fluid extract is only a multiple of the solid, why not omit the former?

The official Fluid Extract of Phytolacca is made from the poke root and not from phytolacca fruit, as we are informed on p. 299.

The formula for Fluid Extract of Wild Cherry shows a decided change both in method of manipulation and in alcoholic strength of the menstruum.

In Fluid Extract of Sanguinaria the use of acetic acid is a decided improvement which should have been extended also to the Fluid Extract of Squill.

[*To be continued.*]

MACASSAR OIL.

By Robert Glenk.

The true macassar oil, prepared from the seeds of Schleichera Trijuga, *Willd.*, one of the East Indian Sapindaceæ, has a great reputation in its native country as a stimulating application to promote the growth of the hair and also as a remedy in skin diseases, especially eczema.

It is obtained either by expression or by boiling the bruised seeds in water and skimming off the oil which rises to the surface.

It has in former years been imported into this country; latterly, however, a product under the name of macassar oil but which in reality was mainly composed of cocoanut oil in which the blossoms of Ylang Ylang, Cananga odorata, or of the false Ylang Ylang, Michelia champaca, N. O. Magnoliaceæ, have been digested, began to make its appearance on the market and took the place of the former. Now, mostly domestic oils under the same name, suitably perfumed and frequently colored red with alkanet, have entirely replaced the natural product.

The writer recently received a small sample of the true macassar oil from Mirzapoor, Hindoostan. At the ordinary temperature it is semi-solid, of a yellowish white appearance and has a weak odor of bitter almonds. It is said to contain hydrocyanic acid and it is not unlikely that in the stimulating properties of this constituent the cause of the ascribed beneficial action of the oil may reside.

It has a mildly acrid taste, probably due to partial rancidity and an acid reaction to litmus paper. It is completely liquefied at 82° F. (28° C.) and congeals near 50° F. (10° C.) The oil is readily saponified by sodium hydrate even at a low temperature, the soap being white and hard. With nitrous acid it assumes an orange red color and becomes viscid but does not seem to solidify. On adding 5 drops of the oil to 20 drops of concentrated sulphuric acid, it acquires a reddish brown color. The oil is freely soluble in chloroform, ether, bisulphide of carbon, benzol, benzine and the fixed and volatile oils, but only slightly soluble in alcohol. It has a specific gravity of 0·942.

An excellent formula for preparing a so-called macassar oil for the hair and which has given great satisfaction to those who have used it, is the following:

℞

Castor Oil,	16 f oz.
Alcohol,	3 f oz.
Oil of Nutmeg,	30 ♏
Oil of Rosemary,	10 ♏
Oil of Sweet Marjoram,	10 ♏
Oil of Neroli,	10 ♏
Oil of Rose,	20 ♏
Tincture of Musk,	1 f ʒ
Alkanet,	sufficient to color

Macassar Pomade, made by the following formula, also makes an excellent preparation:

℞

Castor Oil,	10 oz. weight
Suet,	2 oz.
Spermaceti,	1 oz.
Oil of Nutmegs,	½ f ʒ
Oil of Sweet Marjoram,	½ f ʒ
Oil of Rosemary,	½ f ʒ
Oil of Rose,	15 ♏
Oil of Rose Geranium,	10 ♏
Alkanet root,	sufficient to color

Melt the spermaceti and suet adding the castor oil previously colored by digesting with alkanet, and lastly add when nearly cold the perfumes, which in this case are also the medicaments.

LEAVES FROM A SANSCRIT PHARMACOPŒIA.[1]

By Thomas Stephenson, F.C.S., Pharmaceutical Chemist, Bombay.

The methods of medical treatment adopted by the "medicine men" of uncivilized nations have always a peculiar interest to those of the medical and pharmaceutical professions. It is true that little, if any, material benefit can accrue to the members of these professions by such study, and no pharmacist can hope to make his fortune any more quickly because he is well acquainted with the methods of the aborigines of his own or any other country. But, as an intellectual pleasure, the inquiry into such matters will fully repay itself to anyone who has sufficient knowledge to appreciate it, and such knowledge is possessed in the best degree by physicians and pharmacists only. I feel that these few apologetic remarks are necessary in these practical times, as I do not wish to be assailed with the perpetual *cui bono* (?) complaint, which is always levelled at those who do not make money the direct or indirect object of their leisure time researches.

Some time ago it was my good fortune to make the acquaintance of a high-caste Hindu gentleman in this city, whose family had for generations back practised as "hakims," or native doctors, and in whose possession were a number of very ancient Sanscrit manuscript works on medical subjects. One of these he was engaged

[1] Reprinted from Pharm. Journ. Trans., August 26, p. 161.

translating into Guzerati, and, in return for certain favors received, he showed me his translation, some of the more interesting parts of which I was able, with his assistance and that of a dictionary, to further translate into English. The greatest difficulty that stood in the way was that his knowledge was not sufficient to bring the names of diseases or drugs any nearer than Guzerati. However, he was able to give me a full description of the symptoms of the diseases and furnish me with specimens of most of the drugs, with the result that in nearly every case I was able to find the English synonym.

The manuscript in question appears to be arranged in a very unsystematic manner. It is divided into a number of chapters. Starting with an article on "Fever Medicines," it goes on to treat of "Purgatives," "Female Diseases," "Pills," "Powders," "Ointments," "Aphrodisiacs," "Cough Medicines," "Oils," etc., each chapter containing a more or less lengthy list of recipes, some very sensible, others amusing in their absurdity. It would be impossible, even if desirable, to go through the whole list, so I have singled out a few of the more important groups, and from these will select the more interesting formulæ.

(1) OILS.

The oils used in native practice are very many, the natives of India appearing to place great faith in such forms of medication. They are generally applied externally, but are often taken in doses of 1 or 2 drops on betel leaf (*Piper betel*) for various complaints. Although the processes for the preparation of these oils are, as a rule, varied and complicated, they end in most cases with distillation, and consequently a description of this process as carried out by the natives might with advantage be given here before proceeding to describe the oils themselves.

The process of distillation is a very primitive one indeed. A quantity of the bruised drug is mixed with a certain proportion of milk; this is left to macerate for four or five days, after which it is put into a vessel made of metal or glass. This vessel, which consists of two flask-shaped portions, the necks of which fit into one another, is now closed, and the lower or empty part buried in the ground, whilst the upper part, which contains the drug, remains exposed above the earth. A fire is now kindled round the upper

part of the vessel, and the oil eventually collects in the lower part. This process, I am told, is still employed by hakims for distilling nearly all their oils, those of sandal-wood, nux vomica, jequirity, etc., being typical examples of the process.

Oil of Sandal-wood (Chandan).

Half a maund (14 pounds) of sandal-wood is powdered and mixed with half a pound of milk; this is left to macerate for four days, after which it is distilled in the manner described above.

The oil is employed by natives for asthma, insanity, gonorrhœa and five different forms of fever.

Oil of Nux Vomica.—No. 1.

Take of—

Vux vomica,	4 parts.
Bachnag (aconite),	4 "

Break into small pieces and add 1 pound milk daily for three days. Dry in the shade for three or four days and distil.

This is used as an aphrodisiac, being applied locally on a betel leaf.

Oil of Nux Vomica.—No 2.

Take of—

Nux vomica,	10 pounds.

Break up into small pieces and add 2 pounds milk daily for seven days. Dry in the shade for seven days, and distil as usual.

The dose of this is one to two drops, given with caution, and its uses are as follows:

Internally, one drop on betel leaf is given as an aphrodisiac, also for indigestion, diarrhœa, dysentery, hæmorrhoids, puerperal fever, hemicrania and epilepsy.

Externally it is applied for leucoderma, leprosy and leprous sores, ringworm (the round variety), piles, partial paralysis, and weakness of the sexual organs.

Oil of Buffalo's Horn.

Take of—

Buffalo's horn,	2 pounds.

Chop up and subject to dry distillation in the same manner as in the preparation of other oils.

Dose, one drop on betel leaf, given internally as a general tonic. It is also said to be a useful medicine in diabetes, as it has the power of lessening the amount of sugar in the urine.

Oil of Red Sandal-wood.

Take of—

Red Sandal-wood, ... ½ maund.

Break into small pieces and add 1¼ pound cow's milk daily for four days, shaking it up every morning. Dry in the shade for four days, and distil.

Given internally in doses of two drops on betel leaf for elephantiasis, orchitis, insanity and gonorrhœa.

Oil of Chanoti (Guz.); Gunja (Sans); Jequirity (Eng.)

Take of—

Red Chanoti (Jequirity),	2 parts.
Laving (Cloves),	1 "
Jaiphur (Nutmeg),	5 "
Javantri (Mace),	1 "
Nag Kesar (Cassia pods),	1 "
Ajwain-Khorassan (Omum seeds),	5 "
Dhatura Seeds,	5 "

Steep the jequirity in milk for four days and dry in the shade, then add the other ingredients and distil as usual.

Dose.—Two drops, as a nerve tonic.

Oil of Sulphur.

Take of—

Purified Sulphur, ... 6 parts.
Juice of Calves' dung, a sufficiency.

Rub the sulphur in a mortar with sufficient juice to wet it, daily for three days; then distil. It is used externally for leucoderma, while we have the author's assurance that this marvellous "oil" will, if taken internally in doses of one drop on betel leaf, cure *every* disease known!

Oil of Loban (Olibanum).

Take of—

Loban (Olibanum),	5 parts.
Oil of Malka-gani (Celastrus),	10 "

Break up the olibanum and macerate with the oil in a well-closed vessel for fifteen days. Applied for articular rheumatism.

Oil of Hen's Eggs.

Take six or seven eggs and boil soft; remove from the water, take off the shells, and put the yolks and whites together in a copper pot on a fire. As soon as a smell of burning is perceived, open

the cover of the pot, add 1 or 2 grains of opium, and shut again. Then remove from the fire and set aside on the ground for four or five minutes, when the oil will separate.

Oil of hen's eggs is used as a strengthening application, also as an aphrodisiac, like oil of nux vomica.

(2) PILLS.

This form of medicament is, as with us, one of the principal forms used by these hakims. Their pills, however, are very unscientifically made, being small, irregular in size and shape, and very unequally mixed. The hakim's knowledge of pharmacy does not appear to be so advanced as his knowledge of the healing art. The following are a few of the principal pills:

Aqui-tund-wati Gutika.—"Warming" Pills.

Take of—

Quicksilver,	1 part.
Sulphur,	1 "
Aconite,	1 "
Parsley seed,	1 "
Myrabolams (three varieties, *Hirda*, *Bira* and *Amra*), of each,	1 "
Soda,	1 "
Javkhar (potas. carb.),	1 "
Chitro (plumbago) root,	1 "
Sindan (white salt),	1 "
Black salt,	1 "
Sea salt,	1 "
Ginger (dried),	1 "
Long pepper,	1 "
Nux vomica,	½ "
Cummin seed,	1 "

Powder, mix, mass with lemon juice, and divide into pills of about 2 grains each. Such pills are given as a remedy for fever, jaundice, indigestion and loss of appetite.

Ashwa-chori Gutika.—"Horse-power" Pills.

Contain quicksilver, sulphur, aconite, dried ginger, long pepper, myrabolams (three kinds), *Tankalkhar* (borax), *Nipala* (croton) and *Harya* (orpiment).

Make into a powder, grinding along with the juice of *Jalbhangra* for thirty-six hours, and divide into pills the size of *chanoti* (jequirity) seeds.

These pills are said to cure the following diseases: Dropsy, epi-

lepsy, eighteen varieties of fever, dysentery, cough, asthma, children's cough, pleurisy, jaundice, cramp, stoppage of urine, ague, rheumatism, indigestion, worms, piles, leucorrhœa, gonorrhœa, gleet and diabetes. Rubbed up with sweet oil and applied, they are recommended for hemicrania, while rubbed up with juice of *chitro* root and taken internally they are looked upon as a specific for consumption.

Atisar Gutika.—Diarrhœa and Dysentery Pills.

Composed of—

Opium,	½ part.
Catechu,	1 "
Gapan (sulphate of lime),	1 "
Hing juice (asafœtida),	¼ "

Made into 2-grain pills. Dose, two pills twice a day. This formula is one of the few grains of wheat among the chaff.

Ichabedi Gutika.—Purgative Pills.

These are composed of—

Mercury (metal),	1 part.
Sulphur,	1 "
Borax,	1 "
Croton,	½ "
Ginger,	1 "
Harda (myrabolams),	1 "

Mixed and made into small pills of about 2 grains each.

Madan-Ka-ameshwar Gutika.—"Passion-controlling," or Aphrodisiac Pills.

These contain—

Camphor,	1 part.
Ginger,	1 "
Red oxide of mercury,	1 "
Musk,	½ "
Opium,	½ "
Mace,	1 "
Nutmeg,	1 "
Pellitory (akalkaro),	1 "
Cloves,	1 "
Talc (abrak),	1 "

Made into pills of 3 grains each, one for a dose.

Vijai Gutika.—"Success" Pills.

Contain—

Chini-Ka-bulla (China cubebs),	1 part.
Akalkaro (pellitory),	1 "
Kavcha (cowhage),	1 "

Mal-Ka-gani (celastrus seeds),	1 part.
Laving (cloves),	1 "
Jaiphur (nutmeg),	1 "
Kesar (safflower),	¼ "
Khora-sa-min-ajmo (Niger seed),	1 "
Hinglo (cinnabar),	⅛ "
Mastaki (mastic),	1 "
Chota Gokhru (tribulus terrestris),	1 "

Made into small pills of 2 or 3 grains. Dose, one twice a day with milk, for spermatorrhœa.

(3) POWDERS.

This class of medicines is divided into two sub-classes, viz: *Churān*, which contain only vegetable drugs, and *Ras*, which contain chemicals only, or at least as the principal ingredients. A few examples of the latter must suffice.

Powder for Cough.

Contains—

Sanchlkhar (black salt),	1 part.
Sindankhar (table salt),	1 "
Dhatura seed,	¼ "

Calcine together in an earthen pot. Dose, about 4 grains with butter.

Gaji-Keseri-Ras.—"Elephant and Lion" Powder.

This is a cure for paralysis and allied complaints, for which it is given in doses of about 2 grains with sugar. It consists of mercury, sulphur, garlic (*Lasan*), lime (*Chunam*), ammonia, alum (*Fatki*), long pepper (*Pipar*), borax (*Tankalkhar*), barilla (*Sagikhar*), common salt (*Lohnkhar*), arsenious acid (*Somul*), five varieties of rock salt in equal quantities, ginger, pepper, *Silagit*, plumbago root (*Chitrak*), aconite (*Bachnag*), cinnabar (*Hinglo*), orpiment (*Harthal*), and realgar (*Mansir*).

(4) OINTMENTS (*Malam*).

One example of these will suffice, as they present no peculiarity.

Ointment for Wounds and Boils.

Contains—

Mercury,	4 parts.
Bhudaism (litharge),	4 "
Murthu-thu (cupri sulph.),	4 "
Catechu,	5 "

Resin,	10 parts.
Wax,	10 "
Chikani-supari (a kind of betel),	5 "
Red lead,	4 "
Sweet oil,	10 "

Mix the oil with the wax and resin, and rub up with the powders, previously mixed with the mercury.

(5) VARIOUS CURES.

Scorpion Bites.—Take of—Pure sulphur, tamarind fruit, nutmeg, and opium, equal parts. Make into a paste with water and apply, keeping it warm by holding the part over a fire. This preparation is said to effect an absolute cure in ten minutes.

Snake Bites.—Three internal remedies for this are mentioned in the work in question:

Prean-Mool (root of?) rubbed up in rice water may be given every half hour; or the juice of *Gallo* (*Tinospora cordifolia?*) given at similar intervals; or, again, half hourly doses of *Indra varani* (colocynth) root rubbed up in whey are said to effect a cure.

Rat Bites.—A mixture of *Bhudaism* (litharge), *Dirwenchi* (rhubarb), and *Dharam* (pomegranate rind) is to be rubbed with water and applied on cotton.

Swelling of the Neck.—This is a complaint from which many natives suffer, and no fewer than five rather curious remedies are given in this book. They are as follows:

(1) *Sarpankha* root mixed with cow's urine, to be applied by rubbing.

(2) Black serpent's bones strung together and worn round the neck as a necklace. My Hindu friend informed me in perfect good faith that this was really a marvellous remedy, his father having cured many patients by no other treatment than this. Such a statement sounds amusing to our ears, but after all may not our modern teething necklace and electric belts be only a development of this ancient method of treatment? Necklaces of serpent's bones are very costly; my friend told me that in his father's possession had cost about eighty rupees.

(3) Mango seeds and horse's hoof parings are to be burnt together in a pot, mixed with butter, and applied.

(4) Camel's bones and buffalo's horns in powder are to be mixed with sweet oil (in which the flowers of *Canna indica* have previously

been boiled), and applied to the affected part. This, next to the serpent's-bone necklace, is the favorite treatment for the complaint.

(5) *Akra* flowers (*Hibiscus esculentus*) are to be heated in a closed pot and applied with *ghee* (clarified butter) to the affected part.

The book under review contains many more items, both interesting and amusing, but space forbids more being detailed at present. Many of the remedies mentioned appear absurd to our eyes, but it must be remembered that these remedies are all prepared and administered by the hakim himself, and in many cases simply act as a mask or blind while the patient is being subjected to rigorous hygienic treatment, otherwise it would be difficult to account for the many wonderful and authentic cures wrought by the native medicine men of this and similar countries.

NOTE ON EASTON'S SYRUP.[1]

By R. Wright, Pharmaceutical Chemist.

The original formula for this syrup, as published by Dr. Aitken, in his "Science and Practice of Medicine," included (1) the preparation of ferrous phosphate by precipitating a solution of ferrous sulphate with an excess of sodium phosphate, (2) the preparation of quinine hydrate by treating an acid solution of the sulphate with a slight excess of ammonia, and (3) the solution of the well-washed precipitates, together with a fixed quantity of strychnine, in dilute phosphoric acid; the process being completed by the addition of sugar, which was dissolved in the solution without the employment of heat.

As originally devised, the syrup was intended to contain the equivalent of 1 grain quinine sulphate, $\frac{1}{32}$ grain strychnine (alkaloid), and 1 grain hydrous ferrous phosphate in each fluid drachm.

The process published by Dr. Aitken was faulty in more than one respect, and although, judging from the quantities given in the formula, the evident intention was to produce 24 fluid ounces of syrup, the wording of the recipe was so vague and indefinite, that in the hands of different operators it might yield, as shown by P. W. Squire (*Chemist and Druggist*, vol. xlii, 795), 25, 29 or 31 fluid ounces.

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[1] Condensed from Pharm. Jour. Trans., Sept. 2, 1893, p. 191.

Taking into account the indefiniteness of the original recipe and the susceptibility of the ingredients to undergo physical and chemical changes, it is not to be wondered that the pharmaceutical mind has been greatly exercised over this compound, with the consequent result that numerous suggestions for its improvement have been made.

A careful review of the whole subject has led me to the following conclusions:

(1) That the ferrous phosphate is best prepared by the direct action of phosphoric acid upon metallic iron.

(2) That the employment of the official syrupus ferri phosphatis in the process for making this syrup should be discontinued.

(3) That the quantity of sugar should be reduced by about 10 per cent., as suggested by Martindale and Clague.

The subjoined formula is drawn up in accordance with the above conclusions, and is submitted to the consideration of this Conference, and especially of the members of the Formulary Committee, in the hope that it may be found more satisfactory than existing formulæ:

Take of—

Iron wire, free from oxide,	75 grains.
Concentrated phosphoric acid, sp. gr. 1.5,	11 fl. drachms.
Strychnine in powder,	5 grains.
Phosphate of quinine,	120 grains.
Simple syrup,	13 fl. ounces.
Distilled water, a sufficient quantity.	

Place the iron wire and the phosphoric acid previously diluted with an equal volume of distilled water, in a small flask, plug the neck with cotton-wool, and heat gently until the reaction is complete; then add the strychnine and the phosphate of quinine, and shake till dissolved; filter the solution into the cold syrup, wash the filter and add as much more distilled water as may be required to make the volume of syrup up to one pint.

The above preparation will contain 1 grain phosphate of iron, $\frac{3}{4}$ grain phosphate of quinine, $\frac{1}{32}$ grain strychnine in each fluid drachm.

OILS OF ANISE.[1]

By P W. Squire, F.L.S.

As supplementary to the paper read by Mr. John C. Umney (Am. Journ. Pharm., 1889, p. 255), and the ensuing discussion, the following rough notes, arising out of some experiments in connection with a new edition of the "Companion to the B.P.," may help towards a more accurate knowledge of these oils.

It may be premises that the oil of ordinary anise (*Pimpinella Anisum*) and of star anise (*Illicium anisatum*), when freshly distilled, consists mainly of anethol, a stearopten melting at 70° F., with varying quantities of a terpene. By exposure to air, anethol is gradually converted into anisic aldehyde, with probably some resinification of the terpene, this oxidation being accompanied by certain changes in the physical characters of the oil.

In connection with the solidification and liquefaction of anise oil, there are *three* temperatures to be noted:

(A.) "Abnormal solidifying point," or the temperature at which the oil when cooled first shows indication of freezing. This depends so completely upon conditions of cooling that no figure can be attached to it. Two experiments with the same sample may show a difference of over 20° F., this being true of either variety of oil.

(B.) "Normal solidifying point." This is defined by Mr. Umney as "the temperature to which the thermometer immediately rises on solidification taking place." For two reasons this point is somewhat indefinite. (1) the rise in temperature is more or less gradual, and although much more rapid at first than at the finish, the thermometer is never steady at any one point, and the more solid the frozen mass, the slower the rise in the thermometer; (2) the point to which the temperature rises *rapidly* depends to some extent upon how far the oil has previously been cooled. Supposing one considers the normal solidifying point to be reached, when the rise of temperature is only one degree in half a minute, a difference of 20° in the *abnormal* may make a difference of 3° to 6° in the *normal* solidifying point.

(C.) "Melting point." The temperature at which a sample after freezing becomes completely liquid is the only *constant* factor in connection with the congelation and liquefaction of anise oils. It is

[1] Reprint from Pharm. Journ. and Trans., p. 104, Aug. 5, 1893.

a few degrees higher than the normal solidifying point, and in recent samples may vary from 60° to 68° F.

It must be noted, however, that the congealing point, in whatever way taken, is not of much value either as a character or test, except for fresh oil, as it becomes lower on keeping at a rate differing in each sample. I have had specimens, the melting point of which after two years had only been reduced 5° to 7° F., while other (both from ordinary and star anise), after a similar interval, and kept under roughly similar conditions, could not be made to freeze at 10° F. Whether these differences are due to the larger proportion of the anise terpene accelerating the oxidation of the anethol I have not yet determined experimentally.

The specific gravity depends, (1) on the proportion of terpene ·870, then 10·20, and 25 per cent. of terpene will give specific gravities or ·996, ·982, and ·975, respectively, which covers the maximum and minimum of fresh oils as generally met with; (2) on the oxidation of the anethol into anisic aldehyde, the published sp. gr. of which is 1·100. Of the oils examined, the highest specific gravity which we have noted is 1·105, being the last few ounces of a bottle of English-distilled oil from ordinary anise, so that according to the age of the oil we may have any sp. gr. between ·975 and 1·100.

The polarizing rotation of anise oils in a 200 mm. tube has in the samples examined varied between +2½° and —4½°. It is usually a small minus quantity; appears to have no connection with the source of the oil; does not alter in a year; and is greater in the liquid portion of the oil than in the solid. Pure anethol has probably no rotation whatever.

Anethol requires for solution three parts of rectified spirit and 200 parts of proof spirit. As oxidation proceeds, the solubility increases, till the oil mixes with rectified spirit in all proportions and dissolves in about 100 parts of proof spirit. Star anise oil, however, appears to contain a small quantity of some constituent insoluble in proof spirit, as even after warming the solution is slightly turbid.

Eykmann's test is understood by Mr. Umney (*Ph. J.*, [3], xix, 649) to be "a saturated solution of hydrochloric acid gas in absolute alcohol," and is stated by him to give with "pimpinella" oil a manganese-pink color, and with star anise oil a yellowish-brown color.

In the 1890 edition of the "Companion," however, we mentioned

that this test did not appear to be very definite, as "of five samples tested three (pimpinella) gave a blue color; one (illicium) gave a pink; one (illicium) gave a yellow color," while the result of more recent experiments confirms the observation that with "pimpinella" oil the color given is a rich blue, changing into a more or less brownish-red. Star anise oils give a yellow or brownish-yellow color, usually but not always, changing to a rich red. The test therefore depends not upon the difference between a pink and a yellowish brown color, but upon the production or non-production of a deep blue color, on addition of the reagent, which is best used in considerable excess. I would venture to suggest that the different results obtained by Mr. Umney were due to the use of an alcohol not sufficiently saturated with hydrochloric acid. The reagent used above had a sp. gr. of ·970 and contained 27 per cent. by weight of hydrochloric acid gas. With an acid of half that strength, the characteristic blue color is not produced.

THE CAUSE OF THE RED COLORATION OF PHENOL.[1]

By Charles A. Kohn, Ph.D., B.Sc.,
Lecturer on Organic Chemistry, University College, Liverpool.

Since alkalis (especially ammonia), metallic salts, and oxidizing agents play an important part in the turning red of phenol, their separate and combined actions on specially purified phenol, has been investigated. The purest commercial phenol, known as "absolute phenol," was used in a portion of the experiments; in the remainder, a specially purified sample, kindly prepared by C. Lowe, Esq., of Manchester.

This phenol was first purified by repeated distillation from glass vessels, the first and last portions of each distillate being rejected. The distilled product was then tested with hydrogen peroxide, ammonia, caustic potash, iron and copper salts, after one, six, nine and fifteen distillations, respectively.

The tests were carried out by placing 2–3 cc. of the melted phenol in a test-tube and adding one or two drops of the reagent or mixtures of the reagents. The reagents were employed in various strengths.

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[1] Abstract of a paper read before the British Association (Section B), Nottingham Meeting, 1893, through Chem. News, 1893, p. 163.

Under all conditions a coloration was found to result, even with the fifteen times distilled product, whilst comparative tests showed that no further purification had been effected after the second distillation. Ammonia in concentrated solution produces a deep blue coloration, identical with Phipson's "phenol blue," and probably the same product as phenol-quinone-imide. The formation of this color has long been known, and seems to have been quite overlooked by Fabini in his statement that, in addition to ammonia, metallic salts and hydrogen peroxide are also necessary for a coloration to be formed. Very dilute ammonia, in common with hydrogen peroxide, caustic potash, hydrogen peroxide in presence of ammonia, or of caustic alkali, metals, or metallic salts, with or without hydrogen peroxide, produces a reddish coloration. The intensity and tint of the colors produced by these different reagents vary considerably, but in most instances it inclines to red—the color usually formed in commercial phenol. Whilst it is not likely that these colors are identical, it is probable that they are closely allied products, and the conditions of their formation point to their being oxidation products of phenol. Gentle heating in all cases aids the formation of these colorations.

The phenol, both after nine and after fifteen distillations, was carefully tested for metallic impurities and was found to be quite free from the same. Further, in order to test whether iron and copper salts were readily carried over by phenol when distilled, the product was distilled after the addition of these metals and of their salts, with the result that after two careful distillations from glass vessels the distillate was found quite free from metallic contamination.

That *pure* phenol behaves as described with the above reagents was confirmed by applying the same tests to phenol purified by sublimation, and also to that obtained by the saponification and subsequent decomposition of gaultheria oil.

Of greater importance than the action of these various reagents upon purified phenol, is the fact that the pure product obtained by each of the above processes does of itself become colored when exposed to ordinary moist air. The coloration, which gradually deepens from pale pink or brown to red, is always accompanied by the absorption of moisture, and the reddening is especially conspicuous in the partially liquefied parts of the sample. This coloration does

not take place in the dark, nor under red glass; it is the work of the more refrangible rays of light only.

As has often been observed, sublimed phenol does not redden as rapidly as the distilled product; in fact, according to Bidet, it does not color at all on exposure when thus purified. This, however, is not the case, the sublimed product becomes colored quite as quickly as distilled phenol when in solution, and that it is slower in turning pink when in the solid state is due to the fact that the crystals obtained by sublimation are less hygroscopic than the distilled product. In absence of moisture, under all conditions, no coloration ensues; hence the appearance of the color in those portions of the sample which have become partially liquefied. Phenol placed *in vacuo* can be exposed to light for months without becoming red, nor does it color either in presence of moisture when air is absent, or in presence of air when perfectly dry. Both air and moisture are necessary for the coloration to take place.

The similarity between the colored products formed by the action of moist air and phenol and that produced by hydrogen peroxide naturally led one to look to the latter as the real factor in the oxidation. That such is the case has been conclusively shown by Dr. A. Richardson, who has succeeded in detecting the presence of hydrogen peroxide in reddened phenol, both by the chromic acid and by the titanic acid test.

This same color is produced, together with a complexity of other substances, when phenol is electrolyzed in acid solution. The nature of the colored product formed is still under investigation, and not until the coloring-matter itself is more completely studied can any conclusion be drawn as to the course of the oxidation.

AFRICAN COPAIBA.[1]

By John C. Umney, F.C.S.

I have already called attention to the principal general characters of this oleoresin as imported from the Niger basin in a preliminary note (A. J. P., 1892, p. 33), and compared two samples from that source with specimens of South American origin. The results may be briefly summarized thus:

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[1] Read at British Pharmaceutical Conference, Nottingham, August 16, 1893, through Pharm. Jour. Trans., September 9, 1893, p. 215.

Comparison of Essential Oils.

Properties and Tests.	African.	Maracaibo.	Para.
Percentage of oil.	39 per cent.	42 per cent.	{ A, 80·2 per cent. B, 64·3 per cent.
Specific gravity.	0·9180.	0·9052.	0·9060.
Rotatory power.	+ 20° 42′.	— 34° 18′.	— 28° 55′.
Solubility at 15° in absolute alcohol.	not soluble 1 in 50.	1 in 1.	1 in 1.
In petroleum ether.	1 in 1.	1 in 1.	1 in 1.
In ether ·720.	1 in 3.	1 in 3.	1 in 2½.
In ether ·735.	1 in 3.	1 in 3.	1 in 2½.
In rectified spirit.	not soluble 1 in 50.	1 in 19.	not soluble 1 in 20.
In glacial acetic acid.	1 in 7.	1 in 5.	1 in 3½.
Range of boiling point.	260–273° C.	245–255° C.	252–260° C.
Behavior to dry hydrochloric acid gas in freezing mixture.	Becomes wine-red, turbid, deposits after a time, but no crystals.	Becomes wine-red, turbid, deposits after a time, but no crystals.	Becomes wine-red, turbid, deposits after a time, but no crystals.
Digested for 6 hours with metallic sodium and fractionated.	Blue oil, permanent.	Blue fluorescence only.	262° C., falling to 230° C., green oil.
Behavior to chloroformic gold chloride solution with 1 per cent. absolute alcohol.	Reduces immediately, deposits metallic gold.	Becomes green, no deposit after 1 hour.	Becomes green only no deposit after 1 hour.
Iodine absorption in 16 hours.	251·8.	257·9.	233.
Distilled with bichromate of potash and sulphuric acid.	Bluish-green, 265–267° C.	Bluish oil, rapidly becoming brown (257° C. falling).	Blue color fades on standing 1 hour exposed to air (252° C. falling).

The African oleoresin is slightly fluorescent, possesses an aromatic piperaceous smell, and has a specific gravity of 0·985 to 1·000 at 15° C. It deposits crystals on standing, and yields on distillation with steam about 40 per cent. of volatile oil.

The oleoresin does not lose its fluidity when heated in a sealed tube to 220° C., a property which distinguishes it from gurjun balsam.

The object of this additional paper is to lay before you the results of a more extended examination of the volatile oil and crystalline and other resins briefly mentioned in that note, and a comparison of them with those obtained from South American copaiba.

Volatile Oil.

The average yield of volatile oil obtained by distillation with steam from the samples of African copaiba examined was 39 per cent. The oil was of a pale yellow color, had a specific gravity of 0·9185 at 16° C., and a notation of + 20° 42 with a tube 20 cm. long at 16° C. It is soluble in its own weight of petroleum ether, in 3 parts of ether, 7 of glacial acetic acid, but is not completely soluble in 50 parts of rectified spirit or absolute alcohol. One hun-

dred grammes of the oil was dried over chloride of calcium, and fractionally distilled with the following result:

Below 260° C.,	Nil.
260–265° C.,	62·3 grammes.
265–267° C.,	9·4 "
267–270° C.,	7·4 "
270–273° C.,	5·0 "
Residue,	15·9 "

The unsuccessful attempts to obtain a crystalline hydrochloride by passing dry hydrochloric acid gas through the oil have been recorded in the previous note, the oil only becoming wine-red and letting fall a non-crystalline deposit. No crystalline product could be obtained, moreover, by passing chlorine through the oil immersed in a freezing mixture.

The dry oil yielded on fractionation over metallic sodium a blue oil boiling at 260°, and agreeing with that obtained by Brix (*Jahresbericht*, 1881, p. 1028) from the Maracaibo variety. It may be noted that this blue oil can only be obtained from the perfectly dry oil, several attempts on the moist oil resulting in failure.

Distilled with bichromate of potash and sulphuric acid a bluish-green oil is obtained at 265°, the thermometer falling rapidly.

The original oil reduces rapidly and powerfully a solution of gold chloride in chloroform containing 1 per cent. of absolute alcohol, and the "iodine absorption" in sixteen hours is 251·8.

The fraction boiling at 264° C. was heated for twenty-four hours in the manner described by Wallach (Abst. "Sesquiterpenes," *Pharm. Journ.*, November 12, p. 383) with glacial acetic acid, sulphuric acid and water, and the dark resulting liquid subsequently distilled in a current of steam. From no fraction, however, on cooling could a crystalline hydrate be obtained. From the fraction of South American copaiba oil, boiling at about 260°, a small quantity of a crystalline hydrate was obtained, agreeing in properties with the sesquiterpene hydrate obtained by the previously mentioned worker. No crystalline halogen compounds could be obtained direct from that fraction of the oil.

To determine whether any similarity in physiological action exists between the oils from the African oleoresin and those hitherto imported from South America I have submitted them to E. Hurry Fenwick, Esq., F.R.C.S., for therapeutic experiments.

This eminent specialist has kindly placed at my service his reports[1] on picked cases which he has treated, with the oil in capsules each containing 10 minims. He briefly summarizes his remarks thus: "The oil possesses undoubted therapeutic powers, all the patients, with one exception, acknowledging much benefit from its exhibition. I am told by patients that it is less nauseous to take, repeats less, but is less potent in its effects than the copaiba oil at present in the market (South American). I have used it in prostratic inflammation, fresh and chronic urethritis, stricture and pyelitis."

Reference has been made in the previous communication to the crystalline substance deposited from the crude oleoresin, which by recrystallization from petroleum ether was obtained almost colorless. The crystals are distinctly acid to litmus, electrical by friction and melt at 124° C. The properties are similar in many respects to those possessed by the oxycopaivic acid, separated by Fehling from a deposit from the Para variety of the oleoresin.

From these experiments it will be seen that in many respects the so-called African copaiba corresponds with that imported from South America, and points to the possibility of its being derived from one of the Copaifera which are known to exist in tropical Africa.

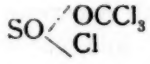
ABSTRACTS FROM THE FRENCH JOURNALS.

TRANSLATED FOR THE AMERICAN JOURNAL OF PHARMACY.

The action of nitrohydrochloric acid on carbon bisulphide has been studied by Schlagdenhauffen and Bloch (*Jour. de Pharm. et de Chim.*, September, 1893, p. 241). A mixture of carbon bisulphide with an excess of nitrohydrochloric acid was distilled, when white crystals were found to have deposited on the neck of the apparatus, becoming very abundant upon several redistillations. These crystals were very volatile, and upon increasing the heat, passed to the receiver, which was cooled with a freezing mixture. The remaining acid liquid yielded an abundant precipitate to barium chloride, while the product of the distillation, deprived of acid by washing with water, deposited upon spontaneous evaporation, white, volatile crystals, possessing an irritating, intolerable odor; they sublimed slowly

[1] I regret that the details of the reports preclude their publication in a pharmaceutical paper.

at ordinary temperature, fused at 135° C., dissolved in nearly all ordinary solvents, particularly in carbon bisulphide, but were insoluble in water, and were precipitated from their solution in absolute alcohol by an excess of water. These properties point to the identity of the crystals with the *trichlormethylsulphurous chloride*, obtained by Kolbe from the action of manganese dioxide and hydrochloric acid on carbon bisulphide, and possessing the formula



Action of aldehydes on polyvalent phenols, aromatic acetals.—From a thesis presented by M. Causse for obtaining the diploma of a pharmacist of the first class, the *Jour. de Pharm. et de Chim* (October, 1893, p. 319) abstracts the following: By the action of aldehydes on phenol either diluted or in acid solution, a molecular combination of a phenol ether and the aldehyde employed is formed; and to designate the combinations the author uses the generic name *acetals*. The diatomic resorcin phenol of the *meta* series forms with ordinary aldehyde, ethylresorcinic acetal, in which two molecules of resorcin are combined for one of aldehyde. The same phenol acting upon chloral or upon glyoxylic acid forms one and the same acetal, glyoxylresorcic acetal, the constitution of which resembles the preceding. One molecule of this phenol also enters into combination with pyrogallol, forming ethylpyrogallic acetal.

Estimation of total bromine in urine.—A. Nicolle publishes the following process, based upon Dechau's process for estimating alkaline bromides; 50 cc. urine and 2 gm. caustic potassa are mixed, and carefully incinerated. The alkali is added for the purpose of decomposing any volatile ammonium bromide, which is liable to form in the course of the operation, into ammonium and potassium bromide. The mixture is heated to dull redness, recovered with boiling water, filtered and the volume made up to about 40 cc.; 10 cc. pure sulphuric acid are now cautiously added and the whole introduced into a long-necked flask, containing 20 gm. potassium bichromate, and connected by means of a glass tube with another flask immersed in cold water, and containing 20–25 cc. of a 4 per cent. potassium iodide solution. All joints of the apparatus should be made with caoutchouc, previously boiled with caustic alkali. On heating the liquid to ebullition, bromine vapors are at

once formed, and are condensed in the other flask, displacing iodine; the operation completed the contents are poured into a flask of 50 cc. capacity, and the volume completed with water. The iodine is estimated (and the bromine by difference) by means of sodium hyposulphite solution in presence of an equal weight of starch. Following are some of the results obtained by this process:

	Bromine.	
	Calculated.	Found.
50 cc. urine containing 0·20 gm. potassium bromide, ...	0·13 gm.	0·122 gm.
50 cc. urine containing 0·50 gm. potassium bromide, ...	0·33 "	0·32 "
50 cc. urine containing 0·50 gm. gallobromol or dibromogallic acid ($C_7H_4O_5Br_2$), . . .	0·243 "	0·24 "

—*Jour. de pharm. et de Chim.*, October, 1893, p. 298.

The comparative action of iodoform on staphylococcus and on the elements entering into the composition of blood has been investigated by Dr. E. Maurel (*Bull. Gén. de Thérap.*, September, 1893, p. 241), by (1) submitting the blood elements to the action of a staphylococcus culture on gelose; (2) submitting the same elements to the action of iodoform; (3) submitting staphylococcus to the action of iodoform; and (4) allowing iodoform to act simultaneously on that micrococcus and on the blood elements. The leucocytes of human blood, absorb, at body temperature, the staphylococci of a gelose culture, but succumb to that absorption within two hours; the blood corpuscles separate, but dissolve and disappear after fifteen hours; and fibrin, which is at first precipitated, is redissolved after twenty-four hours. Iodoform in doses varying from 10 cgm. to 2·50 gm. per liter of blood has no toxic action on the leucocytes; on the contrary, their activity seems to increase proportionately to the dose employed. The author found that iodoform has no apparent action on the reproductivity of staphylococcus, but lessens its *virulence* against leucocytes when blood is submitted to its presence at the same time. From these results the author draws the conclusions, that three distinct properties must be recognized in various microbes, but especially in staphylococcus, *virulence*, *reproductivity* and *survivency*, and that the efficiency of iodoform against staphylococcus, which has been demonstrated by clinical practice, is due to its double action in increasing the activity of the leucocytes, and in diminishing the virulence of the staphylococcus.

The rapid detection of tin, in salt solutions, even in presence of iron, copper, or other reducing substance, is effected by G. Dénigès, by means of a molybdo-sulphuric solution (molybdate of ammonium, 10 gm.; distilled water, 100 cc.; pure sulphuric acid, 100 cc.). Several drops of the suspected solution are placed on a platinum dish with one drop of sulphuric acid, and a piece of zinc is placed on the platinum in contact with the liquid; after one or two minutes the zinc is removed, the dish washed under a thin stream of water, allowed to drain, and if a metallic stain is found on the platinum, at the place of contact with the zinc, it is wetted with 4 or 5 drops of hydrochloric acid, and evaporated to complete dryness. Several drops of water are now placed on the dry residue for several minutes, and one or two drops of the liquid so obtained are added to 2 or 3 cc. of the molybdo-sulphuric solution, when an instantaneous blue coloration will show that tin is present in the solution examined.—*Bull. de la Soc. de Pharm. de Bordeaux*, September, 1893, p. 286.

Fluid extract of digitalis has been admitted into the Danish Pharmacopœia, which has recently made its appearance, and according to Et. Fayn (*Jour. de Pharm. d'Anvers*, August, 1893, p. 298), figures for the first time in any European pharmacopœia. The Pharmacopœia directs the maceration for two hours of 1,000 p. digitalis leaves with 50 p. glycerin and 450 p. dilute alcohol, percolation with 6,000 p. dilute alcohol, and then distillation on a vapor bath, until not more than 1,000 p. remain; the extract is then diluted with 2,000 p. water, evaporated to 1,500 p., filtered and again submitted to evaporation to 500 p., to which 500 p. alcohol are added to obtain 1,000 p. by weight. The extract is of a dark green color, and yields on the addition of 50 p. water a yellowish green limpid liquid. The maximum dose is given as 0·10–0·50 gm. Unless otherwise specified by the physician, an infusion of digitalis may be dispensed by adding water to the above extract in the required proportion.

Syrup of tolu balsam, if kept for several months, exhibits alteration in both odor and taste. M. Ausaldy (*L'Union Pharm.*, Sept., 1893, p. 425) heats such an altered syrup to violent ebullition (above 100° C.), when a disengagement of gas takes place, more or less abundant according to the degree of alteration; upon cooling the aromatic taste, although not very pronounced, will be found to

have returned. Certain authors having suggested, that the change rarely occurs in a syrup having an acid reaction, M. Ausaldy prepared the syrup from a balsam of tolu mixture, to which 0·50 cgm. of benzoic acid, per liter of liquid had been added, and found the product to keep more than a year without change.

Solution for making syrup of iodide of iron is made by Roussillon, according to the following formula which he claims yields an unalterable product: A boiling solution, composed of resublimed iodine 16·40 gm., iron filings 8 gm., and distilled water 30 gm., is filtered into a flask containing 220 gm. pure neutral glycerin, the filter washed with boiling distilled water; the liquids are well mixed and subjected to a moderate heat until they measure 240 gm. The solution is then filled into well-dried bottles, which are closed, and upon cooling the stoppers are covered with paraffin.—*Jour. de Pharm. et de Chim.*, September, 1893, p. 243.

Oxalic acid has been experimented with for some time by Dr. Lardier, for the purpose of obtaining its emmenagogue effect, in the least repugnant form, as he thinks very highly of the medicament for this purpose, and finds that the result of a daily dose of 2 gm. is well characterized. As a result of his investigations he has formulated the following: Oxalic acid, 2 gm., are dissolved in 400 gm. water, and to this solution are added 40 gm. neutral glycerin, and 60 gm. syrup of orange flower.—*Rev. de Thér. Med. Chirurg.*, September, 1893, p. 500.

Injection of creosote-mentholated oil against pulmonary tuberculosis, was reported by M. De la Jarrige to the Congress for Tuberculosis, held in Paris, August, 1893. The formula, which he employs is as follows: Sterilized oil, 100 gm.; creosote, 10 gm.; menthol, 5 gm., of which 30 cc. are injected directly into the trachea.

Upon the same occasion, Weill and Diamantberger reported satisfactory results from *guaiacol* injections; their formula is—Pure guaiacol, oil of sweet almonds, sterilized at 120°, of each equal parts. The injections are made with a syringe of 50 cc. capacity, commencing with one-quarter of that quantity and increasing to daily doses of one or two of the full capacity or in severe cases to even as high as eight injections per day.—*Rev. de Thér. Méd. Chirurg.*, October, 1893, p. 519.

For a menthol dentifrice, the *Ann. di Chim. e di Farm.* (through *Rép. de Pharm.*, Sept., 1893, p. 413) gives the following formula: Flowers of sulphur, 25 gm.; magnesium carbonate, 25 gm.; menthol, 1 gm.; cochineal, 50 cgm.; glycerin, a sufficient quantity.

Solution against insect bites.—The following formula is published by the *Jour. de Pharm. et de Chim.:* Ammonia water, 3 gm.; collodion, 1 gm., and salicylic acid, 10 cgm. One drop to be applied to each spot affected.

GLEANINGS FROM THE GERMAN JOURNALS.

By Frank X. Moerk, Ph.G.

The pepper constituent to which the sharp taste is due is the *piperine;* this substance is not tasteless as generally accepted, but by prolonged contact with the tongue develops the sharp taste which can be better demonstrated by tasting a piperine solution warmed to 50° C.; in the pepper fruit the piperine is dissolved in the essential oil, hence the decreased sharpness of old pepper is explainable by the resinification of the essential oil causing decreased solubility of the piperine. The essential oil has the odor of the fruit, but in alcoholic solution is free from any sharp taste. As an oxidation product of the essential oil, in part at least, is a viscid unsaponifiable oil which also dissolves piperine, but itself is free from odor and taste. In addition to these three constituents pepper contains cellulose, starch and small quantities of coloring matter.—Th. Weigle, *Pharm. Ztg.*, 1893, 584.

Basic organic bismuth salts can be made by taking advantage of the solubility of bismuth chloride in a 25 per cent. solution of sodium chloride or other alkaline chloride and adding the organic acid to this solution. *Basic bismuth gallate:* 100 gm. bismuth chloride are dissolved in 1,800 gm. sodium chloride solution (25 per cent.), filtered, 400 gm. gallic acid added, boiled for 20 minutes, replacing the evaporated water, and pouring into an excess of water sufficient to retain in solution the excess of gallic acid; the precipitate is washed and dried; the product contains 49·2–50 per cent. bismuth and corresponds to the formula $C_6H_2(OH)_3COOBi(OH)_2$.

Basic bismuth pyrogallate: 150 gm. pyrogallol are dissolved in 650 gm. and 316 gm. bismuth chloride are dissolved in 1,000 gm. solution of sodium chloride (25 per cent.); the filtered solutions are mixed, heated for one-half hour in a water-bath and poured into

such a volume of water (about 20 volumes) that precipitation of the basic salt commences; after some time the precipitate is collected, washed with water until the acidified washings cease to react with silver nitrate; the product, apparently, has the formula C_6H_3 (OH) O_2 (BiOH).—Dr. A. Voswinkel, *Pharm. Ztg.*, 1893, 594.

Boro-Salicylic acid solution, containing four grams each of boric and salicylic acid in a liter, proposed by Cesaris and Carcano, has been found of such value in an Italian hospital that it completely replaced the mercuric chloride solution. The addition of the boric acid adds permanency to the salicylic acid solution; the strength of the solution can be increased so as to contain six grams salicylic acid per liter, although this solution was only occasionally used.—(*Bollet. Chim. Farm.*), *Pharm. Ztg.*, 1893, 594.

Cocaine reaction.—To 0·02 gm. cocaine hydrochlorate dissolved in one drop of water is added 1 cc. concentrated sulphuric acid; the colorless solution upon addition of a drop of potassium chromate or bichromate solution gives a precipitate which rapidly redissolves; upon moderate heating the yellowish red color changes to green, while stronger heating causes the escape of benzoic acid vapors. Other reducing alkaloids like morphine are distinguishable by other tests as, for example, the action of sodium hydrate which dissolves morphine but not cocaine.—Dr. Schaerges (*Schwz. Wochenschr. f. Chem. und Pharm.*), *Pharm. Ztg.*, 1893, 602.

Cocaine salts in aqueous solution are precipitated by borax, the precipitate dissolving upon the addition of glycerin. The explanation is that the alkaline borax precipitates the cocaine which is dissolved again when the added glycerin liberates boric acid from the borax. If the solution containing glycerin, borax and some cocaine salt be warmed, a turbidity is noticeable commencing at the top of the solution and travelling downward throughout the entire solution; during cooling the solution becomes perfectly clear again. No explanation is given for this peculiar behavior which results with solutions containing 0·1 per cent. of cocaine hydrochlorate.—M. Lewy, *Pharm. Ztg.*, 1893, 614.

Malakin, or salicyl-phenetidine closely related to phenacetin (acetphenetidine) is recommended as an antipyretic, antirheumatic and antineuralgic; the single dose is one gram, the daily dose 4–6 gms. Insoluble in water, cold alcohol and alkaline carbonates, it is quite

soluble in solution of soda and in boiling alcohol. Despite the insolubility it is readily absorbed, being decomposed in the stomach into phenetidine and salicyl aldehyde; the latter is oxidized and voided as salicylic acid and can be detected in the urine twenty minutes after the introduction of the remedy.—Dr. A. Jaquet (*Korr-Bl. f. Schwz. Aerzte*), *Pharm. Ztg.*, 1893, 615.

Caffearine.—A new alkaloid was isolated from coffee by Dr. P. Palladine by repeatedly boiling the raw coffee (in as fine a condition as possible) with ten times its weight of water, to which a little milk of lime was added; the decoctions are precipitated with solution of lead subacetate in slight excess, filtered, the excess of lead removed by adding sulphuric acid and the solution concentrated; should the solution show considerable color the precipitation with lead subacetate is to be repeated; the caffeine is removed by extracting with 10–12 portions of chloroform or until nothing more is removable. The solution is acidified with sulphuric acid and evaporated several times to volatilize the acetic acid, after which the aqueous solution is decolorized by animal charcoal; the caffearine is next precipitated by potassio-bismuth iodide, the precipitate carefully washed, suspended in water, and decomposed with hydrogen sulphide, the hydriodic acid neutralized with lead carbonate filtered and the precipitation with potassio-bismuth iodide, etc., repeated until the precipitate shows a beautiful crystalline appearance; after decomposing with hydrogen sulphide the solution of the hydroiodate is warmed in a water-bath with silver oxide, carefully neutralized with hydrochloric acid and the hydrochlorate allowed to crystallize. The alkaloid itself, $C_{14}H_{16}N_2O_4$ can be obtained from the hydrochlorate by the use of silver oxide and is obtainable in crystalline needles which are acted upon by light, and are quite soluble in water and alcohol. The hydrochlorate $C_{14}H_{16}N_2O_4\,HCl + H_2O$ forms needles extremely soluble in water, also soluble in dilute alcohol, but insoluble in absolute alcohol. Caffearine differs from caffeine by being precipitable by alkaloidal reagents. —*Apotheker Ztg.*, 1893, 443.

The detection of saccharin in presence of salicylic acid.—The methods for isolating these two substances consist in extracting the acidulated solution with ether and evaporating; this residue will contain both saccharin and salicylic acid if they are present in the material to be investigated, and to positively identify the former has been a matter of

difficulty. A method proposed by Hairs is quite easy: The mixture obtained from the ethereal solution is dissolved in water acidulated with hydrochloric acid and the salicylic acid precipitated completely as brom-salicylic acid by adding bromine water, agitating, filtering, expelling the bromine from the filtrate by a current of air, extracting with ether and evaporating after adding a few drops of a sodium bicarbonate solution; the residue has the intense sweet taste of saccharin and after fusion with potassium hydrate will give the test for salicylic acid which has been produced in the decomposition of saccharin.—(*Journ. d. Pharm. d' Anvers*) *Apotheker Ztg.*, 1893, 500.

The spontaneous ignition of lupulin is reported from Bremen. On one of the trans-atlantic steamers just about ready to sail smoke was seen to issue from a box; upon opening, to see the cause, the material, lupulin, burst into flame. The lupulin had been sent from some part of Bavaria and was to be shipped to this country. The unconsumed portion was found to be thoroughly caked, due to the presence of moisture and thus furnishes the cause of the ignition: a material, rich in oil; moisture; large quantity and considerable time of storage by which the heat generated by the slow oxidation of the oil, was so much increased that it reached the ignition temperature.—*Südd. Apotheker Ztg.*, 1893, 466.

Lignin color test.—Lignin chemically belonging to the class of aldehydes led Dr. E. Nickel to test its behavior towards phenylhydrazine. The wood to be tested is moistened with an aqueous solution of phenylhydrazine hydrochlorate; the wood takes a yellow color which is intensified by the addition of dilute hydrochloric acid; in the course of an hour's standing the yellow color of some woods is changed to a pure green, others require longer standing.—*Chemiker Ztg.*, 1893, 1209.

The detection of lead salts in drinking water succeeds very well if manipulated as follows: One liter of the water and five cc. of glacial acetic acid are evaporated to 100 cc., filtered and 1–2 drops of a diluted hydrogen sulphide solution (1 part saturated solution with 2 parts distilled water) added; the presence of lead salts causes a brown coloration which is to be compared with the result gained with a water known to be free from lead. It is possible by this procedure to detect 0·05 mg. lead in 100 cc. water. By comparison with very dilute solutions of known strength the lead may be approximately estimated.—Prof. M. T. Lecco, *Chemiker Ztg.*, 1893, 1431.

MINUTE OF MEETING OF MEMBERS OF THE COLLEGE.

PHILADELPHIA, September 25, 1893.

A stated meeting was held this day at 4 P.M., in the Hall, Charles Bullock presiding. Twenty-eight members were present.

Dr. A. W. Miller, Corresponding Secretary, announced the names of those who had responded to the notification of their elections as honorary and corresponding members, respectively.

Prof. Trimble reported, verbally, upon the proceedings of the Am. Pharm. Assoc., held at Chicago, referring particularly to the labors of the various sections, and the interest manifested.

Prof. Sadtler reported upon the Proceedings of the Inter. Pharm. Congress, recently assembled in Chicago; this general statement was supplemented by remarks of Prof. Remington upon the positive international character of this body, embracing from this country as well as from foreign lands representatives of all nationalities, the chief interest obviously centering in the formulation of a Universal Pharmacopœia.

Dr. A. W. Miller presented a written report of delegates to the Pan Am. Med. Congress, held recently at Washington, D. C.

The President, on behalf of the Committee on Memorials of Deceased Members, announced the death of Edward Hopper, a former member of this College, at the age of 82. Mr. Krewson announced the death of Thomas Hoskins, a graduate.

The President spoke in eulogy of the late Prof. John M. Maisch, in the following words:

"The Committee on Deceased Members have the painful duty to announce to this College the decease of our late fellow-member and Senior Professor, John M. Maisch, on the 10th of September, after prolonged suffering, from a malady which was beyond the reach of medical skill.

"I scarcely know what to say on behalf of the Committee; your own thoughts will anticipate any words of mine.

"There are occasions in the history of institutions, as well as in the domestic circle, when death spreads a dark mantle over our thoughts of temporal affairs, and a heavy cloud obscures the future, while we look back upon the past, illuminated by the remembrance of the life which has ceased after the work of the day has been accomplished.

"The Board of Trustees, his Associates in the Faculty, and you my fellow-members, feel keenly the loss which we have sustained, yet with our sorrow should be mingled the remembrance that we have been partakers of the fruit of the labor of his life, benefits which will be a lasting memorial of his ability and devotion to the purposes and interests of this College.

"To few are given the various attainments possessed by Prof. Maisch. He was devoted to the department of Science which he had chosen for his special work; as a teacher he was laborious and untiring in his endeavor to bring before his classes all important features pertaining to Materia Medica and Botany, and while an instructor, he was himself a diligent student during his whole life. His retentive memory was an encyclopedia of information, and rarely was he found to be wanting or incorrect in his information.

"As Editor of the Journal of the College for 22 years, he discarded all matter not relevant to the true interests of Pharmaceutical Science; while his ready discrimination enabled him to sift rapidly the literature of his profession. When occasion required criticism, it was done in the kindly spirit characteristic of a mind in pursuit of facts, and not for antagonism.

"The amount of labor which he performed as Author, Editor, Permanent Secretary of the American Pharmaceuticul Association for a long course of years, attest the activity and ability of his well-balanced mind.

"His character in private life is well known to all of us, and requires no eulogy from me.

"It is not the purpose of your Committee to sketch at this time a general outline of the life of our departed Associate; a suitable memoir will be prepared hereafter for publication in the Journal of the College. A strong man has been taken from us; let us endeavor to honor the memory of Prof. Maisch by a renewal of our interest in this Institution to which he was devotedly attached, and seek to maintain the high character of the chair left vacant by his decease."

The Secretary stated that the terms of Henry Trimble and of Jos. W. England as trustees expired with this date, and also that of Daniel S. Jones, deceased, and that an election would be necessary. Tellers being appointed, announced the election of the following gentlemen as Trustees for the ensuing three years: Henry Trimble, Jos. W. England and George M. Beringer.

Prof. Sadtler moved to proceed to an election, also to supply the place in the Board of Trustees made vacant by the death of Prof. John M. Maisch. Mr. Beringer offered a motion to postpone, and Mr. Ross a motion to lay on the table, alleging that undue haste might indicate a want of respect for the memory of Prof. Maisch, both these motions, being negatived, however, an election proceeded, the tellers finally announcing the selection of Jos. L. Lemberger, of Lebanon, Pa., for the position made vacant.

Upon a question arising whether in the event of a number of candidates being presented for choice, a plurality, or a majority of votes shall govern it was the expressed sense of the members that a majority of all votes cast should determine the result.

On motion, adjourned.

WILLIAM B. THOMPSON,
Secretary.

MINUTES OF THE PHARMACEUTICAL MEETING.

OCTOBER 17, 1893.

On motion, Dr. A. W. Miller was called to the chair.

The reading of the minutes was dispensed with, as they had been printed so long since that the members were doubtless familiar with them.

Professor Sadtler presented to the library a copy of the German edition of Wagner's hand-book of Chemical technology, two volumes of Geological Survey of Pennsylvania for 1891, and two for 1892; also a copy of Koenig's Nahrungsmittel and several Bulletins of U. S. Department of Agriculture.

Professor Trimble presented to the cabinet of the College a number of specimens of Oak Bark, eight or ten in number. Mr. Parker, of Connecticut, some specimens of the wood from which Connecticut nutmegs were made.

Mr. Hans M. Wilder presented, through Professor Trimble, a specimen of olive oil at least 1,800 years old; also a specimen of the white and yolk of an egg about the same age. They had been exhumed from the ruins of Pompeii, and there was every evidence that the "finds" were genuine. A vote of thanks was given to Professor Trimble and Mr. Wilder.

Professor Sadtler gave a very succinct and clear explanation of a new distillatory apparatus, patented by M. Barbet, in France. The apparatus exhibited was on a laboratory scale, large enough to demonstrate the successful working of the apparatus on a commercial scale. Its great advantage is that it can be used to rectify weak spirits from 50 percentage to 96 percentage at one operation, and that while doing this it is also possible to "pasteurize" the product so as to make it equal to liquors of several years of age.

Professor Trimble exhibited an improved method of securing the wooden handles to pestle heads; it consists of rings turned on the wooden handle, which pass certain projections in the opening in the head of the pestle and then by turning them they become locked. The invention is one of a recent graduate of the college, Mr. I. J. White.

Mr. Fox stated he had repaired broken pestle handles by having them turned of very dry wood and fitting quite closely. The moisture to which they are usually subjected swells them and thus secures them effectually in their place.

Professor Sadtler made a report on the Chemical Exhibit of the Columbian Exposition at Chicago. The first distinction to be noted was that between the raw or crude material and the manufactured articles. The most valuable and noteworthy in many respects of the exhibits of raw materials was in the Mines and Mining Building, and next that of the Agricultural Building. While the exhibit of mining industry in the aggregate was of surpassing interest and extent, there were some departments of it not nearly so well represented as they were at the Centennial Exhibition. This was notably so in the Lake Superior copper industry.

The Chilian nitrate industry, consisting of nitrate of soda or soda saltpetre as it is termed—also the iodide of copper, the form in which the iodine supply is shipped abroad, was finely illustrated.

The mineral wealth of the Western States formed a most striking feature of the exhibit. A statue of silver mounted on a golden pedestal was shown from Montana, the great silver producing State, while Colorado made the greatest display of gold. The deposits of malachite and azurite from Arizona, surpassed in beauty any that have been displayed. Zinc ores of very fine character were displayed, from Missouri, Wisconsin, and Wythe County, Virginia, being principally blende or sulphide, carbonate and silicate. The Salt Industry of New York State was well displayed, and Louisiana showed a statue of Rock Salt, which was quite noticeable.

The South African diamond fields, which are now known to supply by far the greatest quantity of diamonds of commerce, was shown both here and in connection with Tiffany & Co.'s display in the Liberal Arts Building; the blue clay deposits, washing and polishing, all formed a very instructive display. G. F. Kunz's (the mineralogical expert of Tiffany) display of precious stones of various kinds was a most remarkable showing of almost every kind of stone used for jewelers' use.

The Nickel Ores of Canada, now almost the entire source of commercial nickel in the country were shown very fully.

The Aluminum Industry—which has assumed such large proportions lately—was very well represented, the mineral usually worked being bauxite or oxide of aluminum—the metallic aluminum and its various alloys being exhibited.

A very interesting exhibit was that of the Frick coke works, being a complete model of the coke ovens at Connellsville, with the railways for distributing the coke and other products.

The Platinum industry, as exhibited by the work deposited by the factory of Heraeus & Co., at Hanau, Germany, and by Johnson & Matthey, of London, was very imposing. The large stills used in acid works, which are now lined with gold are not attacked by the acids while the concentration is being effected so that nearly absolutely pure acids may be obtained by the use of the lined stills.

A special chemical exhibit of the Roessler & Hasslacher Chemical Company showed especially cyanide of potassium as used in several processes in the metallurgical arts.

The products of the Stassfurt mines of Germany, which have entirely revolutionized the potash industry, included Carnallite, a chloride of potassium and magnesium—Kieserite and Kainite, these salts being now the sources of potash of commerce.

The output of the various factories depending on these minerals for their supply is enormous.

Linseed oil works were represented showing their various products of oil, meal and cake meal.

Louisiana Sugar Industry, showing the cane in its different states, also ramie fibre.

Chocolate Industry of Germany made a very fine display.

In the Agricultural Exhibit, among other things, Canada showed a mammoth cheese weighing 2,200 pounds.

The various Brewing Companies' exhibits were very extensive and noteworthy.

The display made by the State of Pennsylvania of mineral oils, crude and refined, while large, was completely eclipsed by that made by the Standard Oil Company. This exhibit showed the crude oil, the refined article, and the various products obtained in the processes of refining. The pipe line system was also illustrated with their pumping stations, so that a very clear idea of the whole business might be had from a careful study of the display.

Next to this the Russian oil display commanded great attention, as it was a very creditable display of their products.

The Russian Stearic Acid Works exhibited glycerin of great purity and pure white oleic acid.

The Florida Rock and River Phosphate Companies made extensive exhibits.

The Government Building contained an excellent display of minerals, and in the exhibit of the War Department, also various rifle and artillery powders, especially the smokeless powder.

In the Fisheries Building there was a great variety of products exhibited, cod liver oil being prominent among them.

The meat packing companies having their principal business centres here made a very extensive exhibit.

The Forestry Building was one of the most unique displays in the Exposition —woods of all kinds being there shown both in their rough state with the bark, and dressed smoothly and varnished, showing their structure beautifully.

The California exhibit was a very interesting one, the display of wines and fruit was varied—that of olive oil was particularly noteworthy.

The German Chemical manufacturers made most interesting exhibits, notably that of Ultramarine; a cave of Alum, coated with ultramarine, lighted in the interior made a beautiful display. Various manufacturers were represented in this collective exhibit. Schering, so largely engaged in chloral making, and Merck who also had a separate building in which his preparations were displayed very advantageously.

The German universities' exhibit included rare chemicals made by the professors of the different German schools.

The famous Berlin porcelain wares, so favorably known by chemists, made a good exhibit, while the other makers were also represented.

The exhibit of Norway was notable for its paper and wood pulp used in paper fabrication.

Essential oils of great variety were exhibited by Fritsche Bros., the agents of Schimmel & Co., of Germany.

Japan Camphor Company, a company which was conducted by Americans in Japan for the production of camphor upon American methods, was represented.

A large and interesting display of the various gums and resins used by varnish manufacturers, was also to be seen in the Manufactures Building.

A paper upon the revision of the Pharmacopœia, by Mr. Jos. W. England, was read, and led to considerable discussion, which was on motion deferred to next month's meeting.

On motion adjourned.

T. S. WIEGAND, *Secretary.*

OBITUARY.

Daniel S. Fox, Ph.G., Class '63, died at his residence in Reading, Pa., Tuesday, September 5, 1893, of progressive paralysis, aged 52 years. He graduated from the Philadelphia College of Pharmacy in 1863, and resided in Chicago for some years, where he met with an accident which resulted in the disease which caused his death. For 5 years previous to his death he had been blind and helpless. He was widely known as a pharmacist and was a member of the American Pharmaceutical Association and was also connected with the Pennsylvania State Pharmaceutical Association. He was unmarried and leaves two brothers, both residing in Reading, one of whom, Cyrus T. Fox, being a well-known journalist. He was a member of the Alumni Association, having joined in 1871.